

REMARKS

Claims 17, 18, 20, 51, 54, 57 and 60 have been amended.

Non-elected claims 1 - 16 and 24 - 50 have been canceled in a prior amendment without prejudice or disclaimer of the subject matter thereof. Applicants reserve the right to pursue the subject matter of these claims in continuing and/or divisional applications.

Claims 17 - 23 and 51 - 62 are present in the subject application.

In the Office Action dated November 2, 2005, the Examiner has rejected claims 17, 19, 20, 23, 51, 53, 56 - 60 and 62 under 35 U.S.C. §102(b), and has rejected claims 18, 21, 22, 52, 54, 55 and 61 under 35 U.S.C. 103(a). Applicants respectfully request reconsideration of the subject application based on the following remarks.

Initially, Applicants gratefully acknowledge the courtesies extended by Primary Examiner Hayes during the Interview of December 7, 2005. The Interview included discussions of the Lenker publication and Ikegame et al. patent in view of a claim amendment proposed by Applicants. The proposed amendment included features relating to the inlet and outlet terminals including a connector for connection to portions of an intravenous fluid line, and further defined the opposing fluid flow within adjacent tubing sections. Applicants asserted that the Lenker publication and Ikegame et al. patents did not disclose the features within the proposed amendment. However, no agreement was reached.

The Examiner has rejected claim 17 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Application Publication No. 2002/0156451 (Lenker). Briefly, the present invention is directed toward a fluid cassette for an IV line temperature controlled warming device. The fluid cassette or cartridge receives fluid from an IV line and includes intravenous line tubing arranged in a preformed configuration. The configuration includes tubing sections

arranged in adjacent portions and a central serpentine tubing section that basically reverses fluid flow and facilitates flow in opposing directions within the adjacent tubing sections.

The Examiner takes the position that the Lenker publication discloses the features within this claim.

This rejection is respectfully traversed since the Lenker publication does not disclose each and every feature recited in the claim. However, in order to expedite prosecution of the subject application, independent claim 17 has been amended and recites the feature of the fluid line tubing including a spiral portion including a plurality of nested tubing sections.

The Lenker publication does not disclose, teach or suggest this feature. Rather, the Lenker publication discloses in-line heating accomplished by pumping heated fluid through channels or lumens that run parallel and adjacent to the fluid administration channel in IV tubing (e.g., See Paragraph 0011). Fig. 4 illustrates heat exchange administration tubing including a through lumen and two outer lumens (e.g., See Paragraph 0040). As the delivery fluid flows through the through lumen, warmed heat exchange fluid flows through one of the outer lumens, where heat transfer occurs between the heat exchange and delivery fluids (e.g., See Paragraph 0044). The return heat exchange fluid flows back through the other outer lumen (e.g., See Paragraph 0046). Thus, the tubing includes a linear arrangement, as opposed to a spiral portion including a plurality of nested tubing sections as recited in the claim.

In addition, the Lenke tubing includes a through lumen with delivery fluid and two outer lumens as described above. The outer lumens each include heat exchange fluid, where heat exchange fluid in a first outer lumen flows in the same direction as the delivery fluid, while heat exchange fluid in the other outer lumen flows in a return path opposite the direction of the delivery fluid. Thus, the Lenke publication discloses fluid flow within

adjacent tubing sections in the same direction (e.g., the delivery or through lumen and one of the outer lumens), as opposed to fluid flow directions within each tubing section being opposite the fluid flow direction within each tubing section adjacent that section as further recited in claim 17.

Since the Lenke publication does not disclose, teach or suggest the features recited in independent claim 17 as discussed above, this claim is considered to overcome the Lenke publication.

The Examiner has rejected claims 17, 19, 20, 23, 51, 53, 56 - 60 and 62 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,747,450 (Ikegami et al.). Briefly, the present invention is directed toward a fluid cassette for an IV line temperature controlled warming device as described above. The Examiner takes the position that the Ikegami et al. patent discloses the features within these claims.

This rejection is respectfully traversed since the Ikegami et al. patent does not disclose, teach or suggest inlet and outlet terminals securable to portions of the intravenous fluid line as recited in the claims. However, in order to expedite prosecution of the subject application, independent claims 17, 51 and 57 have been amended and recite the features of: the inlet and outlet terminals or portions each including a connector for connection to portions of the intravenous fluid line, and a plurality of (tubing or concentric) sections, wherein the quantity of sections is based on providing a residence time for fluid enabling the intravenous fluid warming device to heat the fluid to a desired temperature within the range of 60° F - 160° F.

The Ikegami et al. patent does not disclose, teach or suggest these features. Rather, the Ikegami et al. patent discloses a heat sink for semiconductor elements including a pipe

made of a heat conductive material, such as copper or aluminum. The pipe is bent at a middle portion thereof and wound such that forward and return passages for a liquid coolant are formed into a spiral (e.g., See Abstract and Column 3, lines 44 - 58). The heat sink is utilized to cool semiconductor elements, such as diodes (e.g., See Column 4, lines 15 - 18). Thus, the Ikegame et al. patent discloses a heat sink for semiconductor elements and does not disclose, teach or suggest a cassette structurally configured for intravenous fluid lines or, for that matter, inlet and outlet terminals or portions each including a connector for connection to portions of an intravenous fluid line as recited in the independent claims.

The Examiner takes the position that the Ikegame et al. patent discloses tubing with terminals and that the terminals are capable of being secured to an intravenous line. However, the Ikegame et al. patent clearly discloses a heat sink for semi-conductor elements. There is simply no motivation, suggestion or teaching for one to connect a semi-conductor heat sink to an IV line to heat IV fluid. Further, the Examiner indicates that the heat sink is capable of connection to an IV line. Aside from the technical incompatibility of connecting the heat sink to an IV line, this assertion is nowhere mentioned in the Ikegame et al. patent. Moreover, the claims now recite a connector for connection to an IV line. The Ikegame et al. patent simply does not disclose, teach or suggest this type of connection or connector for the heat sink.

In addition, the Ikegame et al. patent further discloses that the number of turns of the spiral wound pipe are selected based on the desired diameter of the heat sink (e.g., See Column 3, lines 61 - 63). Thus, the number of turns of the heat sink is based merely on the desired size or surface area. There is no disclosure, teaching or suggestion of the quantity of sections being based on providing a residence time for fluid enabling an intravenous fluid warming device to heat the fluid to a desired temperature within the range of 60° F - 160° F.

In fact, since the Ikegame et al. patent is directed toward cooling a semi-conductor element, there is no concern for the temperature of the coolant flowing through the heat sink or, for that matter, heating the coolant to a desired temperature in the range of 60° F - 160° F as recited in the claims.

Since the Lenker publication and Ikegame et al. patent do not disclose, teach or suggest the features recited in independent claim 17 as discussed above, and since the Ikegame et al. patent does not disclose, teach or suggest the features recited in independent claims 51 and 57 as discussed above, independent claims 17, 51 and 57 are considered to be in condition for allowance.

Claims 19, 20, 23, 53, 56, 58 - 60 and 62 depend either directly or indirectly from independent claims 17, 51 or 57 and, therefore, include all the limitations of their parent claims. These claims are considered to be in condition for allowance for substantially the same reasons discussed above in relation to their parent claims and for further limitations recited in the dependent claims. For example, claims 20 and 60 have been amended to further clarify the invention and recite the features of a conductive contact detectable by the intravenous fluid warming device to indicate the presence of the cassette within that warming device and control device operation. There is no disclosure, teaching or suggestion of these features within the Ikegame et al. patent.

The Examiner has rejected claims 18, 52 and 54 under 35 U.S.C. §103(a) as being unpatentable over the Ikegame et al. patent in view of U.S. Patent No. 3,293,868 (Gonzalez). Briefly, the present invention is directed toward a fluid cassette for an IV line temperature controlled warming device as described above.

The Examiner takes the position that the Ikegame et al. patent discloses the claimed invention except for a conductive contact and a tangentially extending inlet and outlet. The Examiner further alleges that the Gonzalez patent discloses these features and that it would have been obvious to combine the Ikegame et al. and Gonzalez patents to attain the claimed invention.

This rejection is respectfully traversed. Initially, claims 18, 52 and 54 depend, either directly or indirectly, from independent claims 17 or 51 and, therefore, include all the limitations of their parent claims. Dependent claim 18 has been slightly amended for consistency with amended parent claim 17. As discussed above, the Ikegame et al. patent does not disclose, teach or suggest each and every feature recited within the independent claims. The Gonzalez patent does not compensate for the deficiencies of the Ikegame et al. patent and is merely utilized by the Examiner for an alleged teaching of a conductive contact and a tangentially extending inlet and outlet. However, claim 54 has been amended to further clarify the invention and recites the features of a conductive contact detectable by the intravenous fluid warming device to indicate the presence of the cassette within that warming device and control device operation. There is no disclosure, teaching or suggestion of these features within either of the Ikegame et al. or Gonzalez patents.

Since the Ikegame et al. and Gonzalez patents, either alone or in combination, do not disclose, teach or suggest, the features recited in claims 18, 52 and 54 as discussed above, these claims are considered to be in condition for allowance.

The Examiner has rejected claims 21, 22, 55 and 61 under 35 U.S.C. §103(a) as being unpatentable over the Ikegame et al. patent in view of U.S. Patent No. 5,245,693 (Ford et al.).

Briefly, the present invention is directed toward a fluid cassette for an IV line temperature controlled warming device as described above.

The Examiner takes the position that the Ikegame et al. patent discloses the claimed invention except for a fitting receiving a temperature sensor to measure fluid temperature including a thermally conductive member disposed in the fitting. The Examiner further alleges that the Ford et al. patent discloses this feature and that it would have been obvious to combine the teachings of the Ikegame et al. and Ford et al. patents to attain the claimed invention.

This rejection is respectfully traversed. Initially, claims 21, 22, 55 and 61 depend, either directly or indirectly, from independent claims 17, 51 or 57 and, therefore, include all the limitations of their parent claims. As discussed above, the Ikegame et al. patent does not disclose, teach or suggest each and every feature recited within the independent claims. The Ford et al. patent does not compensate for the deficiencies of the Ikegame et al. patent and is merely utilized for an alleged teaching of a temperature sensor to measure fluid temperature. Accordingly, claims 21, 22, 55 and 61 are considered to be in condition for allowance.

In addition to the foregoing, there is no apparent motivation or suggestion to combine the teachings of the Ikegame et al., Gonzalez and Ford et al. patents. In particular, the Ikegame et al. patent is directed toward a heat sink for semi-conductor elements, while the Gonzalez patent is directed toward a fluid cooling apparatus with tube guide fins that are made of heat conductive material to thermally treat fluid in the tube. The Ford et al. patent is directed toward an apparatus for heating parenteral fluids including a disposable cassette with a unitary member divided to form a serpentine flow path by a plurality of separators. Thus, the patents are directed toward diverging structures and applications, and there is no apparent

reason, motivation or suggestion to combine their teachings (e.g., for one to utilize a semiconductor heat sink with IV apparatus to heat IV fluid) absent prohibited hindsight derived from Applicants' own disclosure. Accordingly, the proposed combinations of the Ikegame et al., Gonzalez and Ford et al. patents do not render the claimed invention obvious.

The application, having been shown to overcome issues raised in the Office Action, is considered to be in condition for allowance and a Notice of Allowance is earnestly solicited.

Respectfully submitted,

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